Math 212
Quiz 28

F 04 Nov

Your name: _____

Exercise

(5 pt) Let $R \subseteq \mathbf{R}^2$ be the square bounded by the lines

$$x + y = -1, \qquad x + y = 1, \qquad x - y = -1, \qquad x - y = 1.$$

Show that

$$\iint_R e^{x+y}\, dA = e - \frac{1}{e}.$$

Hint: Apply a change of variables. More precisely, let the equations of the boundary of the region R and the integrand guide your definition of new variables u, v as functions of the given variables x, y. Solve for x, y as functions of u, v. Remember the Jacobian determinant.